

WHAT IS CLAIMED IS:

1. A display system for a vehicle, comprising:  
a display configured to render a representation of an intended vehicle path; and  
at least one relative speed indicator, rendered upon the display, and configured to move along the representation of the intended vehicle path, in an area of the display that is peripheral to a focus area of the display, in response to a difference between an actual value of a speed-based parameter and a preferred value of a speed-based parameter of the vehicle.
2. The system of claim 1, wherein the at least one relative speed indicator is configured to move along the representation of the intended vehicle path at the preferred value of the speed-based parameter such that any difference between the actual value of the speed-based parameter and the preferred value of the speed-based parameter results in apparent movement of the at least one relative speed indicator at a speed that is proportional to said difference.
3. The system of claim 2, wherein the at least one relative speed indicator comprises a plurality of relative speed indicators continuously positioned along a geometric element of the representation of the intended vehicle path between a foreground visibility limit and a distant visibility limit.

4. The system of claim 1, wherein the actual value of the speed-based parameter is an actual speed of the vehicle, and wherein the preferred value of the speed-based parameter is a preferred speed of the vehicle, and further including a reference speed indicator disposed along the representation of the vehicle path, wherein a distance between the at least one relative speed indicator and the reference speed indicator provides a graphical indication of a difference between the actual speed of the vehicle and the preferred speed of the vehicle.

5. The system of claim 4, wherein the reference speed indicator is disposed within the focus area.

6. The system of claim 4, wherein the reference speed indicator is disposed within the area of the display that is peripheral to the focus area.

7. The system of claim 6, wherein the representation of the intended vehicle path includes a region, within the area of the display that is peripheral to the focus area, within which the relative speed indicator is constrained to move, and further wherein the reference speed indicator is disposed within the region.

8. The system of claim 7, wherein the region further includes a portion that, when the relative speed indicator is positioned therein, expresses a difference between the preferred speed and the actual speed beyond a predetermined magnitude.

9. The system of claim 1, wherein the representation of the intended vehicle path includes

a plurality of polygons, the plurality of polygons sequentially representing intended future vehicle positions, and

a plurality of lines linking like corners of adjacent polygons,

wherein each of the at least one relative speed indicators is configured to move along one of the plurality of lines.

10. The system of claim 1, further including a limit to the movement of the relative speed indicator along the representation of the intended path of the vehicle, wherein the relative speed indicator is configured to approach the limit asymptotically as the difference between the actual and preferred values of the speed-based parameters increase.

11. The system of claim 1, further including a limit to the movement of the relative speed indicator along the representation of the intended path of the vehicle, wherein the relative speed indicator is configured to approach the limit linearly as the difference between the actual and preferred values of the speed-based parameters increase.

12. A method of graphically expressing a difference between a preferred speed of a vehicle and an actual speed of a vehicle, comprising:

displaying a three-dimensional representation of an intended path of the vehicle, the representation of the intended path having a central area indicating a position to attain in order to continue on the intended path;

displaying a relative speed indicator along at least one geometric component of the representation of the intended path;

moving the relative speed indicator along the at least one geometric component, in an area peripheral to the central area, when the actual speed of the vehicle differs from the preferred speed of the vehicle.

13. The method of claim 12, further comprising:

displaying a reference speed indicator along the representation of the vehicle path, wherein a distance between the at least one relative speed indicator and the reference speed indicator provides a graphical indication of a difference between the actual speed of the vehicle and the preferred speed of the vehicle.

14. The method of claim 13, further comprising:

defining a region of the representation of the intended vehicle path within the area peripheral to the central viewing area;

displaying the reference speed indicator within the region; and

constraining the relative speed indicator to move within the region.

15. The method of claim 12, further including:

moving the at least one relative speed indicator along a portion of the three-dimensional representation of the intended path at the preferred speed of the vehicle such that any difference between the actual speed and the preferred speed results in apparent movement of the at least one relative speed indicator at a speed that is proportional to said difference.

16. The method of claim 15, wherein the at least one relative speed indicator includes a plurality of relative speed indicators, the method further comprising:

defining a first limit to relative speed indicator movement in a foreground portion of the three-dimensional representation of the intended vehicle path;

defining a second limit to relative speed indicator movement in a distant portion of the three-dimensional representation; and

continuously positioning the plurality of relative speed indicators along the portion of the three-dimensional representation of the intended path between the first limit and the second limit.

17. A system for depicting differences between an actual speed of an aircraft and a preferred speed of the aircraft, comprising:

a display configured to render a representation of an intended flight path, the representation of the intended flight path including a plurality of polygons, each polygon representing a future position along the intended flight path, wherein adjacent corners of adjacent polygons are connected by connecting lines to form a three-dimensional tunnel, the connecting lines including open-ended extending portions that extend from a polygon representing a most immediate future position; and

a plurality of relative speed indicators, rendered upon the display, wherein each of the relative speed indicators is configured to move along one of the connecting lines as the actual speed of the aircraft varies from the preferred speed of the aircraft.

18. The system of claim 17, wherein the plurality of relative speed indicators are configured to move along the connecting lines at the preferred value of the speed-based parameter such that any difference between the actual speed of the aircraft and the preferred speed of the aircraft results in apparent movement of the plurality of relative speed indicators at a speed that is proportional to said difference.

19. The system of claim 18, wherein the plurality of relative speed indicators are configured to be continuously positioned along a connecting element between a foreground visibility limit and a distant visibility limit.

20. The system of claim 18, further including a reference speed indicator disposed along the three-dimensional tunnel, wherein a distance between at least one of the plurality of relative speed indicators and the reference speed indicator provides a graphical indication of a difference between the actual speed of the vehicle and the preferred speed of the vehicle.